

What is claimed is:

1. A method for producing functional polypeptide compositions originating from silk protein having an average molecular weight not lower than 10,000 and not higher than 200,000 and being excellent for cell growth-promoting activity, extensibility and the like, comprising:

solubilizing a raw silk protein material from the domesticated silkworm or *Antheraea yamamai* in an aqueous solution of neutral salt, said raw silk protein material having an average molecular weight larger than 200,000 and at least a part or the whole of the H-chain and L-chain of silk fibroin and sericin left undegraded in the case of the raw silk protein material from the domesticated silkworm;

treating subsequently the solution with a peptide bond-cleaving agent; and

cleaving peptide bonds between specific amino acid residues of silk protein.

2. The method for producing functional polypeptide compositions originating from silk protein according to Claim 1, wherein the raw silk protein material is the one consisting of one or more kinds selected from cocoon filaments spun by the domesticated silkworm or by *Antheraea yamamai*, raw silk and silk threads which are processed materials of cocoon filaments, and undegummed material, half-degummed material and degummed material of silk fabric and textile.

3. The method for producing functional polypeptide compositions originating from silk protein according to Claim 1, wherein an aqueous solution of neutral salt of the raw silk protein material is treated with the peptide bond-cleaving agent and then the resulting polypeptide composition is subjected to a desalting process.

4. The method for producing functional polypeptide compositions originating from silk protein according to Claim 1, wherein the peptide bond-cleaving agent is an enzyme, hydroxylamine or a dilute acid.

5. The method for producing functional polypeptide

compositions originating from silk protein according to Claim 1, wherein the peptide bond-cleaving agent is hydroxylamine.

6. The method for producing functional polypeptide compositions originating from silk protein according to Claim 1, wherein the peptide bond-cleaving agent is an enzyme selected from lysyl endopeptidase, chymotrypsin, papain, pepsin, trypsin and thermolysin.

7. The method for producing functional polypeptide compositions originating from silk protein according to Claim 1, wherein the peptide bond between specific amino acid residues is Asn-Gly bond.

8. The method for producing functional polypeptide compositions according to Claim 1, wherein the functional polypeptide compositions originating from silk protein having an average molecular weight not lower than 10,000 and not higher than 200,000 and being excellent for cell growth-promoting activity, extensibility and the like are in an aqueous solution form.

9. An aqueous solution of functional polypeptides originating from silk protein having an average molecular weight not lower than 10,000 and not higher than 200,000 and being excellent for cell growth-promoting activity, extensibility and the like, obtained by the steps of:

solubilizing a raw silk protein material from the domesticated silkworm or *Antheraea yamamai* in an aqueous solution of neutral salt, said raw silk protein material having an average molecular weight larger than 200,000 and at least a part or the whole of the H-chain and L-chain of silk fibroin and sericin a left undegraded in the case of the raw silk protein material from the domesticated silkworm;

treating subsequently the solution with a peptide bond-cleaving agent;

cleaving peptide bonds between specific amino acid residues of silk protein; and

subjecting the solution to a desalting process after the cleavage.

10. A method for using an aqueous solution of functional polypeptides originating from silk protein having an average molecular weight not lower than 10,000 and not higher than 200,000 and being excellent for cell growth-promoting activity, extensibility and the like as skin care medicament, quasi drug and cosmetic materials, comprising:

film formation;

powder formation;

gel formation; and

emulsification, in which the solution is obtained by the steps of:

solubilizing a raw silk protein material from the domesticated silkworm or *Antheraea yamamai* in an aqueous solution of neutral salt, said raw silk protein material having an average molecular weight larger than 200,000 and at least a part or the whole of the H-chain and L-chain of silk fibroin and sericin left undegraded in the case of the raw silk protein material from the domesticated silkworm;

treating subsequently the solution with a peptide bond-cleaving agent;

cleaving peptide bonds between specific amino acid residues of silk protein;

subjecting the solution to a desalting process after the cleavage; and

converting into film, powder, gel or emulsion.